

## In the Claims

Cancel claims 5-16.

Amend claims 1 and 3 and add new claims 22-26 as noted below.

1. (amended) A microporous hollow support fiber membrane comprising solvent-resistant polybenzimidazole having the following characteristics:

- (i) surface pores less than one micron in diameter;
- (ii) nitrogen permeance of at least  $5 \text{ m}^3/\text{m}^2 \cdot \text{hr} \cdot \text{atm}$ ;
- (iii) tensile strength of at least 100 g/fil;
- (iv) elongation at break of at least 10%;
- (v) an inner diameter of from about 200 to about 1000 microns; and
- (vi) a wall thickness of from about 30 to about 200 microns

wherein said hollow support fiber has been rendered solvent-resistant by cross-linking with a multi-functional alkyl halide.

3. (amended) A separation module comprising:
- (a) a chamber having feed and retentate ends and means for removing permeate near the feed end;
  - (b) a bundle of thin film composite hollow fiber membranes arranged substantially parallel to each other in said chamber, each of said composite hollow fiber membranes comprising a microporous solvent-resistant hollow support fiber comprising polybenzimidazole having at least one permselective coating on the surface of said support fiber, said support

fiber having the following characteristics:

- (i) surface pores less than one micron in diameter,
- (ii) nitrogen permeance of at least  $5 \text{ m}^3/\text{m}^2 \cdot \text{hr} \cdot \text{atm}$ ,
- (iii) tensile strength of at least 100 g/fil,
- (iv) elongation at break of at least 10%,
- (v) an inner diameter of from about 200 to about 1000 microns, and
- (vi) a wall thickness of from about 30 to about 200 microns

wherein said hollow support fiber has been rendered solvent-resistant by cross-linking with a multi-functional alkyl halide; and

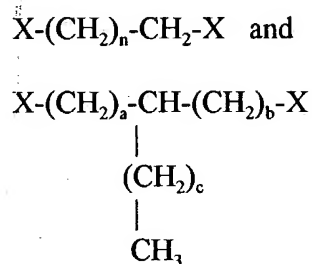
- (c) means for securing and sealing said bundle of hollow fiber membranes to said chamber at said feed and retentate ends so as to permit fluid communication with a feed stream.

A marked-up copy of claims 1 and 3 showing additions and deletions is enclosed on the Appendix hereto.

22. The hollow support fiber of claim 1 wherein said crosslinking is conducted by contacting said membrane with a crosslinking solution comprising a multi-functional alkyl halide in a solvent followed by heating said membrane sufficiently to cause crosslinking to take place.

23. The hollow support fiber of claim 22 wherein said solvent is selected from

a ketone and an ether and said multi-functional alkyl halide has a structure selected from



where X is selected from Br and Cl,

n is an integer of from 1 to 11,

a is an integer of from 1 to 10,

b is a number of from 0 to 4, and

c is a number of from 0 to 6.

24. The hollow support fiber of claim 23 wherein said multi-functional alkyl halide is dibromobutane, said solvent is selected from the group consisting of acetone, methyl isobutyl ketone, methyl ethyl ketone and pentanone, and said heating is conducted at a temperature of from 25° to 200°C for 0.5 to 48 hours.

25. The hollow support fiber of claim 22 wherein a surface of said hollow fiber membrane is coated with at least one permselective coating.

26. The hollow support fiber of claim 25 wherein said at least one permselective coating is a crosslinked polymer selected from the group consisting of poly (acrylic acids), poly (acrylates), polyacetylenes, poly (vinyl acetates), polyacrylonitriles, polyamines,

polyamides, polyethers, polyurethanes, polyvinyl alcohols, polyesters, cellulose, cellulose esters, cellulose ethers, chitosan, chitin, polymers containing hydrophilic groups, elastomeric polymers, halogenated polymers, fluoroelastomers, polyvinyl halides, polyphosphazenes, poly(trimethylsilylpropyne), polysiloxanes, poly (dimethyl siloxanes) and copolymers and blends thereof.

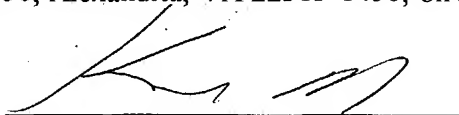
Respectfully submitted,



Kevin L. Russell  
Reg. No. 38,292  
Of Attorneys for Applicant  
Tel: (503) 227-5631

#### CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Patent Application, Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450, on June 27, 2003.



Kevin L. Russell